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STEP

AUTHOR: ⑧ Strigachev, A. T.

TITLE: ⑥ Comparison of the nuclear energy levels of  $Gd^{152}$  with the theory of non-axial nuclei

PERIODICAL: ⑤ TRANS. FROM Moscow. Universitet. Vestnik. Seriya III. Fizika, astronomiya, no. 6, 1962, 20-23

TEXT: The conclusions drawn from Davydov's theory of the non-axial nuclei (Izv. AN SSSR, ser. fizicheskaya, 25, no. 7, 782, 1961; Nucl. Phys., 20, 499, 1960) are compared with the experimental results on the first excited levels of  $Gd^{152}$ . Results:  $\mu = 0.36$  and  $0.25$ ,  $\gamma = 12^\circ$  and  $10.5^\circ$  for  $Gd^{154}$  and  $Gd^{156}$  respectively. The values of  $E_1(6^+)/E_1(2^+)$  and  $E_2(4^+)/E_1(2^+)$  resulting therefrom are in good agreement with the experimental data.

$\mu \approx 1.1$  and  $\gamma = 18^\circ$  was found for  $Gd^{152}$ , and hence the value  $E_1(4^+) = 757$  keV. More accurately, this value is 764 keV. Transition from the 756-keV level to the ground level is not direct.  $4^+$  is preferred out of the two

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Pd

Comparison of the nuclear energy...

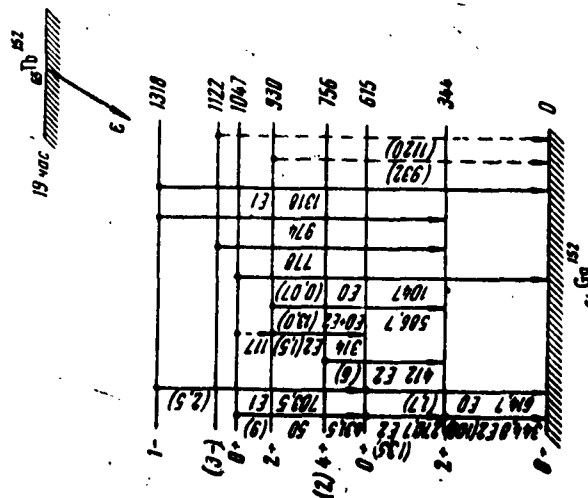
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possible characteristics  $2^+$  and  $4^+$ . The high value of  $\mu \approx 1.1$  indicates that the nucleus behaves "softly", i.e., a close relationship exists between the collective nucleon motions and the mononucleonic excitations. The change in  $\mu$  of the Gd isotopes with varying mass number is proportional to the change in  $\gamma$ . There are 4 figures.

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Fig. 1



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